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EXAMINER

MENON, KRISHNAN S

ART UNIT PAPER NUMBER

1723

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/007,516

Applicant(s)

POPE ET AL.

Examiner

Krishnan S Menon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 and 45-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 and 45-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claims 1-38 and 45-61 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-4, 13-16, and 25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP-10-165,777.

JP (777) teaches a filter device comprising a housing with ends (fig 1,3), a ring (2) joinable to the end with an annular anchor(22-fig 2) on the interior portion of the ring, a flange cap (6), potting material (5) and plurality of hollow fiber membranes (4), inlet and outlet ports through the flange caps (61) and housing (12), and flange cap is separated from the first end of the housing by the ring as in instant claim 1-3, 14 and 15. The microfiber is hollow fiber and semipermeable as in instant claim 4 and 16 (abstract, para 0002). The housing is cylindrical as in instant claim 13 and 25 (see figures).

2. Claims 12, 24, 26 – 30, 34 and 35 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP (777).

JP (777) teaches a filter device prepared by the process comprising joining a ring having an annular anchor (2,22-fig 2) on an end of a housing, inserting a plurality of micro-fibers in the housing, encasing the microfibers and the anchor in a potting

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material and joining a flange cap to the ring as in instant claims 26 and 28 (see specification). The filter device formed also has inlet and outlet ports on the flange cap and the housing (see fig 1) as in instant claim 35. The different process steps of welding, centrifuging, etc. as in instant claims 27,29,30 and 34 are immaterial to the product as the product limited by the process is non-patentable over the prior art if the product formed is same as or obvious from the prior art made by a different process (**In re Thorpe**, 227 USPQ 964 (1985)).

JP teaches all the limitations of claims 1 and 14, including welding for the joining of the ring and end cap to the housing. Claims 12 and 24 add further limitation of laser welding. However, laser welding is a process step, and is unpatentable over the prior art (**In re Thorpe**)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 8-11, 20-23, 31-33 and 55-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP (777) in view of Lacy et al (US 6,280,619).

Claims 8-11, 20-23, 31-33: JP (777) teaches all the elements of the instant claims as in claims 1-4, 13-16, 25, 26, 28 and 35, and spin-welding as a means to join the ring and the end caps to the housing (para 0042). JP does not teach details of spin welding like the nubs and the channels to assist the spin welding. Lacy (619) teaches spin welding as a means for joining housing and end cap of a filter (see fig 4 and 5). Instant claims 8 and 20 recite spin welding; 9, 21 and 31 recite the nubs to assist spin welding; and 10,11,22,23,32 and 33 recite the channels to contain the flash from the spin weld. Details of spin welding including the ledges (46), shield or 'flash' cover (48), and channels formed to contain the flash (at 70 or 48) are seen in fig 4 and 5 and col 3 lines 47-57 of Lacy (619). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Lacy (619) in the teaching of JP (777) because JP does not provide spin welding details. It may be noted that the specific structural details provided for spin welding (like the nubs and the channels) do not structurally change the apparatus (in re Thorpe).

Claims 55-58: JP (777) teaches a filter device comprising a housing with ends (Fig 1), a ring joinable to the end with an annular anchor (2,22) on the interior portion of the ring, a flange cap (6), potting material (5) and plurality of hollow fiber membranes (4), inlet and outlet ports through the flange caps (61) and housing (12); all in figures, as

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in instant claim 55 and 56. The filter device formed also has inlet and outlet ports on the flange cap and the housing (see fig 1) as in instant claim 57.

JP (777) also teaches a means for joining the ring, the end-caps and the housings (para 0042), but is silent on the details of accommodating the residue form the joining of the parts as in the instant claims. Lacy (619) teaches such a means for joining housing and end cap of a filter (see fig 4 and 5) with shield or 'flash' cover (48), and channels formed to contain the flash (at 70 or 48) are seen in fig 4 and 5 and col 3 lines 47-57. It would be obvious to one of ordinary skill in the art at the time of invention to use the methods of accommodating residue form the joining of the parts as taught by Lacy (619) in the teachings of JP (777) since JP is unclear on such details.

2. Claims 50-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP (777) in view of Eguchi (US 5,472,601).

JP (777) teaches a housing with a first end having a ring joinable to the first end (fig 1), a plurality of hollow fibers inside the ring encased in potting material, the ring forming an annular anchor in the inside of the housing for the potting material, and an flange-cap joinable to the first and second ends, and flange cap is separated from the end of the housing by the ring as in instant claim 50 and 51 (figures), inlet and outlet ports as in claim 52 (see fig). JP also teaches rounded rim for the anchor 22.

JP does not teach the rims of the ring forming ridges preventing delamination of the potting material as in claim 50, radial channels for air escape in the rings as in instant claim 53, more than one ridges to improve the anchoring with upper and lower

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edges. Eguchi teaches these limitations in col 4 lines 37-47 and fig 1,2. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Eguchi in the teaching of JP for improved potting as taught by Eguchi (col 1 lines 22-32). Re plurality of ridges, Eguchi teaches more than one ring to improve the anchoring (col 4 lines 37-47) with upper and lower edges, which is equivalent to multiple ridges.

3. Claims 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP (777) in view of Eguchi (US 5,472,601) as in claim 51 above and further in view of Elgas (US 5,922,202).

Instant claim adds the further limitation of surface treatment to modify the surface energy of the anchor. Elgas (202) teaches surface treatment by corona discharge of the hollow fiber surfaces to improve the bond between the hollow fibers and the potting compound in a hollow fiber device (col 8 lines 45-55). It would be obvious to one of ordinary skill in the art at the time of invention to have such a surface treatment on the anchors of the ring of the teaching of Eguchi (601) to improve the bonding of the potting material on the surface and prevent delamination.

4. Claims 5,17,36 and 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP(777) in view of Elgas et al (US 5,922,202)

JP teaches the limitations of claims 1-3,14, 26,34 and 35. Instant claims add the further limitation of surface treatment to modify the surface energy of the anchor. Elgas (202) teaches surface treatment by corona discharge of the hollow fiber surfaces to

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improve the bond between the hollow fibers and the potting compound in a hollow fiber device (col 8 lines 45-55). It would be obvious to one of ordinary skill in the art at the time of invention to have such a surface treatment on the anchors of the ring of the teaching of Eguchi (601) to improve the bonding of the potting material on the surface and prevent delamination.

5. Claims 6,7, 18,19, 37,38, 48 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP(777) in view of Elgas (202) as in claims 5,17,36 and 45-47 above and further in view of Eguchi (601).

JP teaches rounded ridge for the rim of the ring (anchor – see fig) but does not teach the rims of the ring forming ridges preventing delamination of the potting material, radial channels for air escape in the rings, more than one ridges to improve the anchoring with upper and lower edges. Eguchi also teaches the rims of the ring forming ridges prevent delamination of the potting material as in instant claims 6,17, 37, and 48 (see col 4 lines 16-65), radial channels for air escape in the rings as in instant claims 7,19, 38 and 49(5-fig 1,2), more than one ring to improve the anchoring (col 4 lines 37-47) with upper and lower edges, which is equivalent to multiple ridges on the ring, as in instant claims 6,17, 37, and 48. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Eguchi in the teaching of JP for improved potting as taught by Eguchi (col 1 lines 22-32).

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6. Claims 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP in view of Lacy (619) as in claim 56 above, and further in view of Eguchi (US 5,472,601) and Elgas et al (US 5,922,202).

JP in view of Lacy does not teach, but Eguchi teaches the rims of the ring forming ridges prevent delamination of the potting material as in instant claim 60 (see col 4 lines 16-65), and radial channels for air escape in the rings as in instant claim 61(5-fig 1,2), more than one ring to improve the anchoring (col 4 lines 37-47) with upper and lower edges, which is equivalent to multiple ridges, as in instant claim 60.

JP in view of Lacy and Eguchi does not teach surface treatment to modify the surface energy of the anchor as in instant claims 59. Elgas (202) teaches surface treatment by corona discharge of the hollow fiber surfaces to improve the bond between the hollow fibers and the potting compound in a hollow fiber device (col 8 lines 45-55). It would be obvious to one of ordinary skill in the art at the time of invention to have such a surface treatment on the anchors of the ring of the teaching of Eguchi (601) to improve the bonding of the potting material on the surface and prevent delamination.

Response to Arguments

Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion


This action is after and RCE and is made non-final.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Krishnan Menon
Patent Examiner


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